

Patent Claims

1. A chain assembly method for joining a link-plate chain having alternating outer and inner chain links using prefabricated inner chain links preferably comprising two parallel link plates (2, 3) and hollow pins (4, 5) connecting the latter, characterized by the following steps:
 - 10 providing at least one completely prefabricated inner chain link (1),
positioning the inner chain link (1) so that the hollow ⁹
pin axis (A) of the at least one inner chain link (1) ¹⁰
is aligned substantially parallel to the supporting or ¹¹
15 retaining face ¹² of the inner chain link (1),
providing at least one link pin (6, 7), positioning the at least one link pin (6, 7) so that the pin axis (A) ¹⁴ is arranged coaxially with the hollow pin axis (A) of
20 the associated hollow pin (4, 5) of an inner chain link ¹⁶ (1),
inserting the link pin (6, 7) into the hollow pin (4, 5) by means of relative displacement of the link pin (6, 7) and of the at least one inner chain link (1) in
25 relation to each other so that the end regions of the ²¹
link pin (6, 7) project on both sides, ²²
providing at least one pair of outer link plates (10, 11), so that each end region of a link pin (6, 7) is ²⁴
30 assigned one of the outer link plates (10, 11) of a ²⁵
pair of outer link plates and the axis (B) of the ²⁶
receiving hole (12, 13) is aligned with the axis (A) of ²⁷
the associated link pin (6, 7),
35 pressing the two outer link plates (10, 11) of a pair ²⁹
of outer link plates in one operation onto the end ³⁰
regions of two link pins (6, 7) to produce an outer chain link connected to at least two inner chain links

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(1) arranged in a row, 33

riveting the ends of the link pins (6, 7). 34

5 2. The method as claimed in claim 1, in which the arrangement of the inner chain link (1) on the supporting or retaining face is carried out in such a way that the hollow pin axes (A) are arranged substantially at right angles to the action of the
10 force of gravity.

3. The method as claimed in claim 1 or 2, in which the inner chain link (1) is positioned first and then the associated link pins (6, 7) are supplied to be
15 positioned.

4. The method as claimed in claim 1 or 2, in which the link pins (6, 7) are positioned first and then the associated inner chain link (1) is supplied to be
20 positioned.

5. The method as claimed in one of claims 1 to 4, characterized in that the outer link plates (10, 11) of a pair of outer link plates are prepositioned simultaneously from both sides relative to the associated inner chain links (1).
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6. The method as claimed in one of claims 1 to 5, characterized in that the action of pressing the two
30 outer link plates (10, 11) of a pair of outer link plates on in one operation is carried out symmetrically in relation to the link pins (6, 7) previously fixed symmetrically with respect to a chain center line (M).
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35 7. The method as claimed in one of claims 1 to 6, characterized in that the method steps are combined into four cycle groups, the steps of one cycle group being carried out simultaneously by machines, the first cycle group comprises the steps:
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providing at least one completely prefabricated inner chain link (1), positioning the inner chain link (1) so that the hollow pin axis (A) of the at least one inner chain link (1) is aligned substantially parallel to the supporting or retaining face of the inner chain link (1),

the second cycle group comprises the steps:

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providing at least one link pin (6, 7), positioning the at least one link pin (6, 7) so that the pin axis (A) is arranged coaxially with the hollow pin axis (A) of the associated hollow pin (4, 5) of an inner chain link (1), inserting the link pin (6, 7) into the hollow pin (4, 5) by means of relative displacement of the link pin (6, 7) and of the at least one inner chain link (1) in relation to one another so that the end regions of the link pin (6, 7) project on both sides,

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the third cycle group comprises the steps:

providing at least one pair of outer link plates having receiving holes (12, 13) for the link pins (6, 7), positioning the at least one pair of outer link plates so that each end region of a link pin (6, 7) is assigned an outer link plate (10, 11) of a pair of outer link plates and the axis (B) of the receiving hole (12, 13) is aligned with the axis (A) of the associated link pin (6, 7), pressing the two outer link plates (10, 11) of a pair of outer link plates in one operation onto the end regions of two link pins (6, 7) to produce an outer chain link connected to at least inner chain links (1) arranged in a row,

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the fourth cycle group comprises the step:
riveting the ends of the link pins (6, 7).

Imp 8. The method as claimed in one of claims 1 to 7 for

producing a multiple chain, in particular a duplex chain, which additionally comprises the following steps:

5 arranging at least two completely prefabricated inner chain links (1) lying beside each other so that the hollow pin axes (A) of the inner chain links (1) lying beside each other are arranged coaxially with one another,

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joining at least one center link plate (14, 15) having receiving holes (17, 18) for the link pins (6, 7) between inner chain links (1) lying beside each other so that the hole axes (C) are arranged coaxially with 15 the hollow pin axes (A).

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9. The method as claimed in claim 8, in which the link pins (6, 7) are positioned first and then the associated inner chain links (1) and center link plates 20 (14, 15) are supplied to be positioned.

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10. The method as claimed in claim 8 or 9, characterized in that the method steps are combined into five cycle groups, the steps of one cycle group 25 being carried out substantially simultaneously by machines, the first cycle group comprising the steps:

providing at least one completely prefabricated inner chain link (1), positioning the inner chain link (1) so 30 that the hollow pin axes (A) of the at least one inner chain link (1) is aligned substantially parallel to the supporting or retaining face of the inner chain link (1), arranging at least two completely prefabricated inner chain links (1) lying beside each other so that 35 the hollow pin axes (A) of the inner chain links (1) lying beside each other are arranged coaxially with one another,

the second cycle group comprises the steps:

joining at least one center link plate (14, 15) having a receiving hole (17, 18) for the link pins (6, 7) between inner chain links (1) lying beside each other 5 so that the hole axes (C) are arranged coaxially with the hollow pin axes (A),

the third cycle group comprises the steps:

10 providing at least one link pin (6, 7), positioning the at least one link pin (6, 7) so that the pin axis (A) is arranged coaxially with the hollow pin axis (A) of the associated hollow pin (4, 5) of an inner chain link (1), inserting the link pin (6, 7) into the hollow pin 15 (4, 5) by means of relative displacement of the link pin (6, 7) and of the at least one inner chain link (1) in relation to each other so that the end regions of the link pin (6, 7) project on both sides,

20 the fourth cycle group comprises the steps:

providing at least one pair of outer link plates having a receiving hole (12, 13) so that each end region of a link pin (6, 7) is assigned one of the outer link 25 plates (10, 11) of a pair of outer link plates and the axis (B) of the receiving hole (12, 13) is aligned with the axis (A) of the link pin (6, 7), pressing the two outer link plates (10, 11) of a pair of outer link plates in one operation onto the end regions of two 30 link pins (6, 7) to produce an outer chain link connected to at least two inner chain links (1) arranged in a row,

the fifth cycle group comprises the step:

35 riveting the ends of the link pins (6, 7).

Imp 11. The method as claimed in claim 10, characterized in that the first and second cycle group are carried

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out in a different sequence.

12. The method as claimed in claim 11, characterized in that the link pin (6, 7) is pushed into the center link plate (14, 15) before the first cycle group is carried out.

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